

8/ 884  
MDDC-884  
MDDC-884

30 JUN 47

MDDC-884

UNITED STATES  
ATOMIC ENERGY COMMISSION  
OAK RIDGE  
TENNESSEE

AN INTEGRATION RADIATION METER FOR BETA AND GAMMA RAYS,  
SIGMION, MARK 10, MODEL 70

Argonne National Laboratory

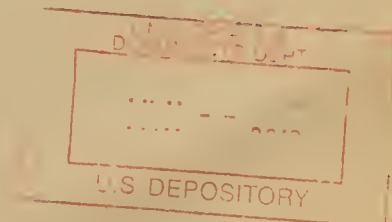
Published for use within the Atomic Energy Commission. Inquiries for additional copies and any questions regarding reproduction by recipients of this document may be referred to the Technical Information Division, Atomic Energy Commission, P. O. Box E, Oak Ridge, Tennessee.

Inasmuch as a declassified document may differ materially from the original classified document by reason of deletions necessary to accomplish declassification, this copy does not constitute authority for declassification of classified copies of a similar document which may bear the same title and authors.

Date of Manuscript: Unknown

Document Released: January 17, 1947

This document consists of 2 pages.





AN INTEGRATION RADIATION METER FOR BETA AND GAMMA RAYS,  
SIGMION, MARK 10, MODEL 70

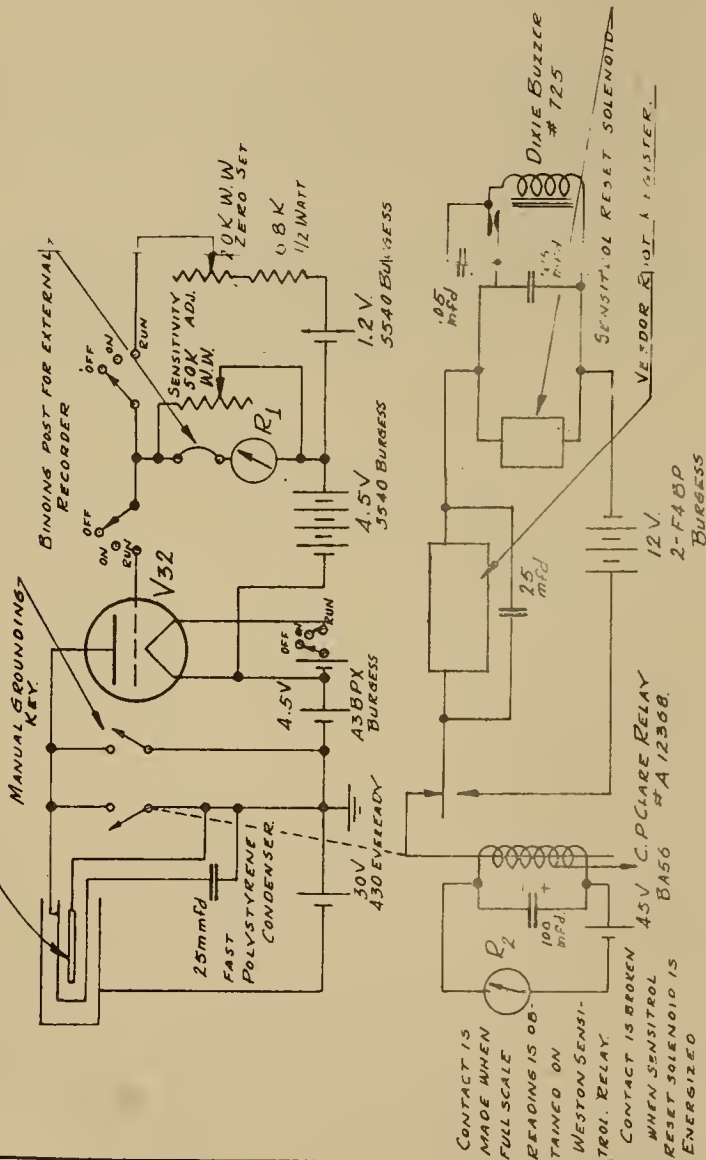
The instrument consists of a 50 cc ionization chamber and an electronic circuit which is so constructed that when the total amount of gamma radiation falling on the chamber reaches any selected value up to 20 mr, an alarm rings, the circuit is reset, and is again ready to operate.

Each time the circuit is reset a message register is operated so that the total amount of radiation falling on the ionization chamber in any length of time can be measured.

The circuit as shown in the diagram uses a Victoreen V32 tube in an inverted manner so that the normal plate is the control grid and the normal grid is the plate. When used in this manner the effective grid currents are of the order of  $10^{-14}$  amperes and do not vary appreciably with effective grid potential. These grid currents are balanced out by an adjustable uranium rod suitably placed in the ionization chamber.

The instrument is self-contained with a battery life for continuous use of approximately 3 months. A cap is provided which may be placed over the ionization chamber to exclude beta particles from entering it. This instrument has been found very useful for determining the integrated amount of radiation present in any locality. Weight about 15 lbs.

URANIUM 200 TO BALANCE GRID CURRENT



V32 VICTOREEN TRIODE, VARNISHED  
WESTON SENSITROL RELAY MOO.705 20 MICRO-AMPS, MAKES CONTACT  
ON INCREASING VALUE AT 20 EQUIPPED WITH 6VOLT SOLENOID RESET  
R1 & R2 ARE WESTON SENSITROL RELAY

DESIGN	DRWG NO	PM 10787
MARK 10	SHEET NO	1 OF 1
SCALE	SCALE	NONE
INSTRUMENT SECTION		
METALLURGICAL LABORATORY UNIVERSITY OF CHICAGO		
DES BY	REVISOR	DATE
ON BY	DATE	DATE
APP BY	DATE	DATE

"This drawing, together with all information and know-how disclosed therein, is the property of the University of Chicago, and, no use, disclosure, or reproduction of any part thereof may be made except by written authorization of the University of Chicago."

Figure 1



UNIVERSITY OF FLORIDA



3 1262 08909 7850